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STOWAGE PLANNING
LOADING SURVEYS
MARINE INSPECTION

DISPLACEMENT SURVEYS
LOSS PREVENTION
HEAVY LIFT LOADING

INSPECTION REPORT: 00-295

August 3, 2000

This is to certify that undersigned surveyor on request of Ober, Kaler, Grimes and Shriver attended on board subject vessel in order to inspect accident site, where ship's crane #4 had failed, causing crane boom to drop onto shore-based discharge crane and causing death to 2 crew members; survey and reports as follows:

NAME OF VESSEL:	M/V "LEON I"
OWNERS:	Eternity Shipping Ltd. Malta
CARGO COMMODITY:	Raw Sugar in Bulk
PORT OF DISCHARGE:	Baltimore, Md., USA
PLACE OF DISCHARGE:	Domino Sugar Pier, Baltimore, Md., USA
DATE OF ARRIVAL/DISCHARGE:	July 24, 2000
PLACE OF SURVEY:	On board the vessel during discharge at Baltimore
DATES OF SURVEY:	July 29. and 31. 2000
REASON FOR SURVEY:	Failing of topping wires on Crane #4, causing same to fall, damaging shore based discharge crane and death to two (2) crew members.

Present During Time of Survey:

Capt. Heiner Popp:

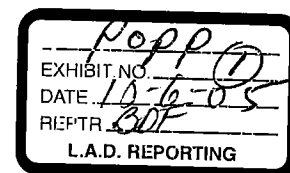
Surveyor for Capt. Heiner Popp, Inc. on
behalf of Ober, Kaler, Grimes & Shriver
(Owners P&I club)

Vessel's Particulars:

Flag:	Malta
Gross: 19,872 RGT	NET: 14,401 RGT
LOA: 198.40m LPP: 185m Breadth: 24m	
Built: Poland at Szczecin Yard, 1982	
Class: ABS	

Subject vessel is a bulk cargo carrier with 7 holds, aft accommodation and fitted with 4 deck cranes.

Hatch covers are steel folding pontoons - hydraulically operated.



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SURVEYOR'S NOTES:

It was reported that vessel had been in process of discharge July 29, 2000. At appr. 09:00 hours boom of ship's crane #4 dropped down. As alleged, basket had been hanging on hook of boom with 2 crew members cleaning coaming of hatch 6A aft of residue sugar. During drop down of boom, basket was dragged over stowed hatch covers located between hatch opening #6 and #6A. Crew members were spilled/ catapulted from basket. Shore crane boom which was located over hatch #6, than was hit by falling ship's boom, causing collapse of shore crane boom and back stay/bracing and drop down into hold by same.

FINDINGS:

Undersigned boarded vessel July 29, 200 at 11:00 hours. Police and Coast Guard investigation was ongoing at this time with medics, police officers and CG personal on board.

Weather: Cloudy, light wind, 92 degrees Fahrenheit.

GENERAL OBSERVATIONS:

- a. Hatches #6 and 6A were found open with pontoons stowed in their respective stow locations.
- b. Discharge gear, i.e. 2 dozers were found parked in bottom of hold #6, stowed under center beam.
- c. Shore crane boom was found hanging from shore crane down into hatch way #6 with some of cat walk rails having dropped down into hold #6.
- d. Ship's crane #4 was found with boom pointing forward and resting on covers between hatches 6 and 6A. Boom top was directly over port coaming #6 hatch port side.
- e. Boom block was found hanging within it's runner, located within catwalk area.
- f. Basket base was lying on deck adjacent and leaning against catwalk with wire bridle still connected to block shackle, 3 of the corner stanchions had broken off but were still attached to bridle.
- g. Lumber board chips and planks from within basket were found scattered port side on deck, between stowed hatch covers on deck and within hold #6 in tank top area and on top of sugar cargo. One hard hat was noted lying on deck port aft adjacent to hatch coaming #6. One shoe was found middle of port deck between hatch coaming and bulwark.
- h. Coaming hatch 6A aft and port side aft from within hatch was found clean and free of sugar residue. Sugar residue was found clinging to inside of coaming starboard and middle aft of coaming area. End of cleaned area indicates to what point crew had advanced when cleaning coaming.

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Crane #4,

Location: aft of hatch 6A in center line. Crane is mounted on pedestal, with base platform above height of vertically stowed hatch pontoons.

Manufacturer: ISHIKAWAJIMA HARIMA (IHI) HEAVY INDUSTRIES CO, LTD.

Type: Electric

Crane Capacity: 20.0MT

Last Quintennial Inspection Date: 20. 12. 1999

Last Annual Inspection Date: 20. 12. 1999

Inspection Company: ABS

Crane Cabin: Electric switch board in back of crane open with covers resting at left against side paneling of crane cab.

At left side of crane operator seat there is a handle pedestal for topping and sluing of crane. Handle was found in a slight lowering position(Forward by appr. 3 degrees) .

At mid-height of lever pedestal there is a chrome button which controls the override for the limit switch . Key hole on button was in 45 degree angle to right- which indicates unlocked position.

Right side of crane operator seat there is a handle pedestal for lowering and raising of lifting block runner. Lever was found in full open position with lever moved to 90 degrees aft. (Raising of runner)

CRANE WIRES:

Wires for crane were inspected within drum area and at top of crane.

Crane boom topping wire: 26mm diameter, 6 strands, 37 wires per strand plus 1 fiber core.

Wire was found parted with loose, frayed ends jammed in areas of sheaves at top of crane. Parts of fiber core were found lying at top of crane cabin and within sheave areas of crane top sheave assembly.

Wire appears to have been parted in one area only, with ends of wire showing bright and shiny metallic surface. Individual wires within strands were found curled/ frayed out.

One additional area of partial parting, i.e. meat hooks around circumferences of wire was found. Grease was noted disturbed in this area indicating possible contact with sharp surface.

Wire was well greased and no other deficiencies were noted.

Crane runner wire: 35mm diameter, 6 strands, 37 wires per strand plus 1 fiber core.

Wire was found in good order and well greased. No meat hooks were noted.

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CRANE BOOM:

Heavy indentation on right side boom girder from underneath in area of 6.3m distance from extreme boom top. Round sharp impact area in centerline(blue color discoloration) of girder indicated where ship's boom contacted with shore crane. Left girder of boom showed creasing in equal distance from boom head, no impact marks were noted, indicating that this boom girder buckled by force of impact on opposite side. .

Interconnecting bracing between boom girders showed grease staining and gouging at center, indicating where wires had cut into steel when boom was in free fall.

TOP OF CRANE/ SHEAVE ASSEMBLY

Within sheave areas at top of crane paint residue and fiber core remnants were noted. Sheaves appear to be in good order and alignment.

A total of 6 sheaves are located at top, 2 (2nd and 3rd from left) for boom topping wire and 4 (1st, 4th, 5th and 6th) for runner.

2nd sheave was found empty with rope fiber debris within groove.

MACHINERY COMPARTMENT (underneath crane cab)

Cable drums were found in compartment. A right side of cable drums the mechanism for crane winches by-pass was located. Two (2) by passes were located in one box. Box was open, no cover was found over mechanism.

- a. Limit switch traveler for boom topping wire was found at maximum raised position – traveler was actually slightly past disconnect contact.
- b. Limit switch traveler for runner was in midsection.

Topping wire was found slack and hanging down within compartment, last windings were loose.

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MEASUREMENTS:

CRANE TURNING RADIUS:

Crane blue prints were made available. Boom in max. topped position has a turning radius of 4.59m.

Measurements were taken from center of crane pedestal #4 forward. It was found that with boom raised to maximum height- with crane pointing forward- distance of runner block to inside of coaming is 2.27m.

BASKET:

Dimensions: 1.50m x 1.20m x 0.60. Basket was of steel angle construction (0.05m x 0.07m angles) With lumber board flooring and sides. Corner angle bars were provided with one (1)- 1/4" wire per corner post which in turn were found spliced to continuous link appr. 6' above basket.

LOCATION OF SHOE:

3.2m off coaming port side and 1.90m forward of end of hatch coaming #6.

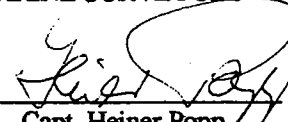
LOCATION OF HARD HAT:

Adjacent to hatch coaming port side and 1.10m forward of aft corner of #6 hatch.

**SURVEY AND REPORT MADE WITHOUT PREJUDICE AND SUBJECT TO TERMS AND
CONDITIONS OF CONTRACTS/AGREEMENTS**

REQUESTED BY: Mr. M Hamilton Whitman, Jr.
Ober, Kaler, Grimes & Shriver
120 East Baltimore Street
Baltimore, Maryland 21202

CAPT HEINER POPP, INC.
MARINE SURVEYORS

BY: 
Capt. Heiner Popp

HP:bp
Encl.

In accepting this report or instrument it is agreed that the extent of the obligation of this firm with respect thereto is limited to furnishing a surveyor believed to be competent, and in the making of this report or instrument the surveyor is acting on behalf of the person, company and/or firm requesting same, and no liability shall attach to his firm for the accuracy, errors, and omissions thereto.

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PHOTO CAPTIONS:

1. View of port side with crane #4 – boom forward.
2. Topping wire at top of crane sheave assembly with torn wire and opened strands.
3. Scuff marks on topping wire and rope wire core lying on crane cab roof.
4. Boom head assembly with block remnants of basket (base ropes that were used to hold basket still).
5. Basket side stanchions with lifting wire.
6. Block was provided with main shackle. Solid link of basket bridle was secured by shackle to block shackle
7. Lashing rope that was secured to block shackle
8. Hatch cover pontoon 6A that showed drag
9. Luffing handle was forward – arrow slightly back
10. Runner handle fully engaged to back
- 11&12 Electrical switch panel with covers removed
13. DS switch to normal – on
14. View from top of crane towards top of boom – Hold 6
- 15,16,17 Broken topping wire with frayed out ends. Bright tears on end of wire fraying. (Rope core section lying at top of crane cab)
18. Sheave assembly with frayed residue on 2nd from left
19. Sheave assembly with broken wires.
20. Frayed out topping wire.
- 21, 22, 23 Shore crane with lattice type back stay support and boom hanging into Hold #6
- 24, 25 Hatch coaming #6A port aft – with sugar scraped off up to midsection
- 26, 27, 28 Hold #6 aft under hatch cover 6A with 2 dozers parked in back, sugar remaining forward and bucket lying on sugar. Wood debris at left is from basket floor from where crew was working
29. Buckled/ indented crane boom at right side – caused by impact of ships' boom and shore crane head section
30. Shore crane head section
- 31, 32 Wood debris from basket that was spilled out when basket was flipped and dragged over open covers #6 aft and 6A forward.

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PHOTOGRAPH CAPTIONS cont.

33. Top of block with impact mark.
34. Block with view from front.
- 35, 36, 37 1 basket wire was secured to block shackle by fiber rope.
- 38, 39 Hold #6 aft – port, debris adjacent to coaming. Floor boards from basket and hard hat.
- 40, 41, 42 Crane drums override switches
43. Topping wire drum with loose wind.
- 44, 45 Sluing gear with override lock. Key insert indicates that it is unlocked.
46. Chalk mark on coaming hatch #6 port side indicates how far off block was from coaming when fully topped.
47. Overall view of accident site with boom #4 resting on hatch covers. In foreground shore crane with collapsed boom.
48. Accident site from aft forward standing adjacent to starboard hold #7.
49. View of crane boom from within crane cab with boom resting forward on lids 6aft and 6A forward.
50. Shore crane after boom had been removed from hatch.
51. Overall view of crane boom #4 from forward to aft.
52. Close up of ship's crane resting on hatch covers. (In fore ground impact area where boom impacted with shore crane boom.